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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,092	01/07/2004	Masatomo Shibata	035532-0138	2332
22428	7590	07/25/2005	EXAMINER	
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			BLUM, DAVID S	
			ART UNIT	PAPER NUMBER
			2813	

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/752,092

Applicant(s)

SHIBATA, MASATOMO

Examiner

David S. Blum

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/18/04</u> , <u>01/07/2004</u> | 6) <input type="checkbox"/> Other: ____ |

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This action is in response to the application filed 1/7/04.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Motoki (US 20020028564A1).

Motoki teaches the device of claims 1-16 as follows.

Motoki teaches an ingot or substrate with a mirror flat surface (paragraphs 0358, 0366, and 0367). Motoki does not mention that the average angles in the substrate surface are greater than its variance (claim 1), however, this is a normal statistical result, that a measurement is greater than its variance. Further, as in claim 11, mirror polishing provides this result and the surface of Motoki is mirror flat (paragraph 0367). A mirror flat finish would also describe the limitations of claim 2, where there is a flat surface, an inclination angle with a variation that is nearly constant at an arbitrary point (also in claim 4). A mirror flat finish would also describe the limitations of claim 3, where there is

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a flat surface, a normal vector of an inclination angle with a variation that is less than 180 degrees (also in claim 5).

Regarding claim 6, the substrate is a group III-V (gallium nitride) single crystal and is hetero-epitaxial (more than one type of atom) on a hetero-substrate (seed layer of GaN paragraphs 0366 and 0367). Regarding the limitation of "grown", that is a process limitation and given no patentable weight in these device claims.

Even though product-by-process claims are limited by and defined by the process, determination of Patentability is based upon the product itself. The patentability of a product does not depend on its method of production." MPEP 2113

Regarding claim 7, the group III-V (gallium nitride) single crystal is a self-standing substrate (GaN on GaN, no support substrate).

Regarding claim 8, the group III-V (gallium nitride) single crystal is a hexagonal system (both the instant application and Bensaoula teach GaN. Thus the GaN of Motoki is hexagonal as in the instant application.

Regarding claim 9, the group III-V (gallium nitride) single crystal is of a hexagonal system (as above) and the low index surface closest to the substrate is the C-surface (paragraph 0358).

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Regarding claim 10, the group III-V (gallium nitride) single crystal is of a hexagonal system (as above) and the low index surface closest to the substrate may be the A-surface, the M-surface, or the R-surface (paragraphs 0360-0369).

Regarding claim 11, the substrate is mirror finished (mirror flat (paragraph 0367) reads on mirror finished). Regarding the limitation that the surface is mirror finished, that is a process limitation and given no patentable weight. The patentability of a product does not depend on its method of production." MPEP 2113

Regarding claim 12, mirror flat reads on theta being 10 degrees or less (mirror flat reads on mirror finish. The two surfaces having a mirror finish would be within the limitations of theta.

Regarding claim 13, mirror flat reads on alpha being 1 degree or less (mirror flat reads on mirror finish. The two surfaces having a mirror finish would be within the limitations of the variance of alpha.

Regarding claim 14, mirror flat reads on theta being 10 degrees or less (mirror flat reads on mirror finish. The two surfaces having a mirror finish would be within the limitations of theta and within the limitations of the variance of alpha.

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Regarding claim 15, the low surfaces closest to the surface are c-face as above and the inclination direction in A-axis direction (figures 14-16).

Regarding claim 15, the low surfaces closest to the surface are c-face as above and the inclination direction in M-axis direction (figures 14-16).

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Blum whose telephone number is (571)-272-1687) and e-mail address is David.blum@USPTO.gov .

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr., can be reached at (571)-272-1702. Our facsimile number all patent correspondence to be entered into an application is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David S. Blum

July 21, 2005